



**BASIC LIFE SUPPORT  
ADVANCED CARDIAC LIFE SUPPORT**

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# Tujuan Pembelajaran



- Peserta dapat memahami dasar – dasar Bantuan Hidup Dasar
- Peserta dapat melakukan tindakan Resusitasi Jantung Paru yang berkualitas
- Peserta dapat memahami Tatalaksana Lanjut Resusitasi Jantung Paru (ACLS)



# PENDAHULUAN

- **RESUSITASI**

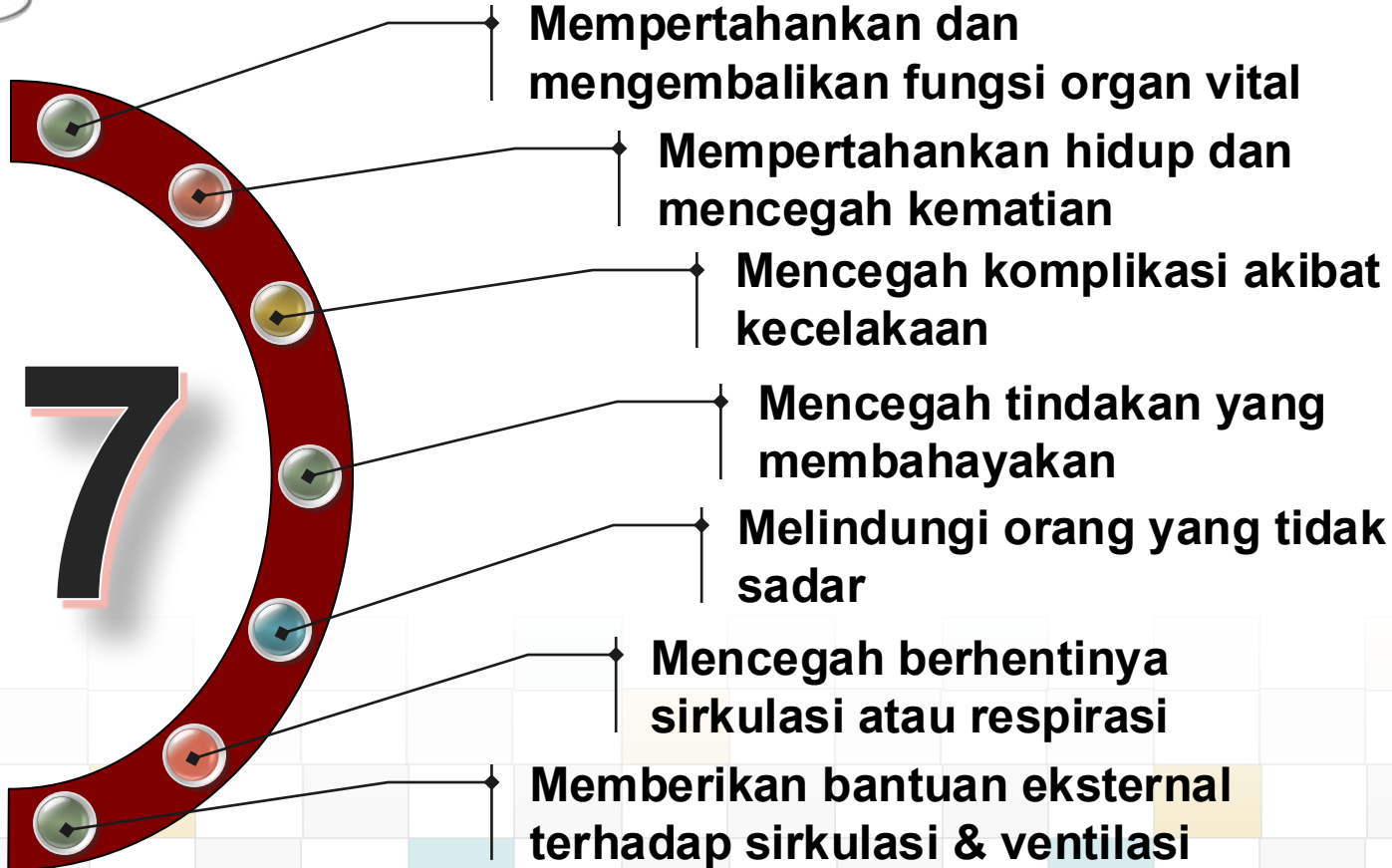
Suatu tindakan darurat sebagai suatu usaha untuk mengembalikan keadaan henti napas atau henti jantung ke fungsi optimal guna mencegah kematian biologis (Ghofar, 2012)

- **RESUSITASI JANTUNG PARU (RJP)**

Usaha yang dilakukan untuk mengembalikan fungsi sirkulasi dan pernapasan yang sangat bermanfaat bagi penyelamatan kehidupan dengan memberikan asupan oksigen dan sirkulasi darah ke organ tubuh yang sensitif terhadap kekurangan oksigen, seperti Otak dan Jantung pada orang yang mengalami serangan jantung, kecelakaan atau tenggelam.

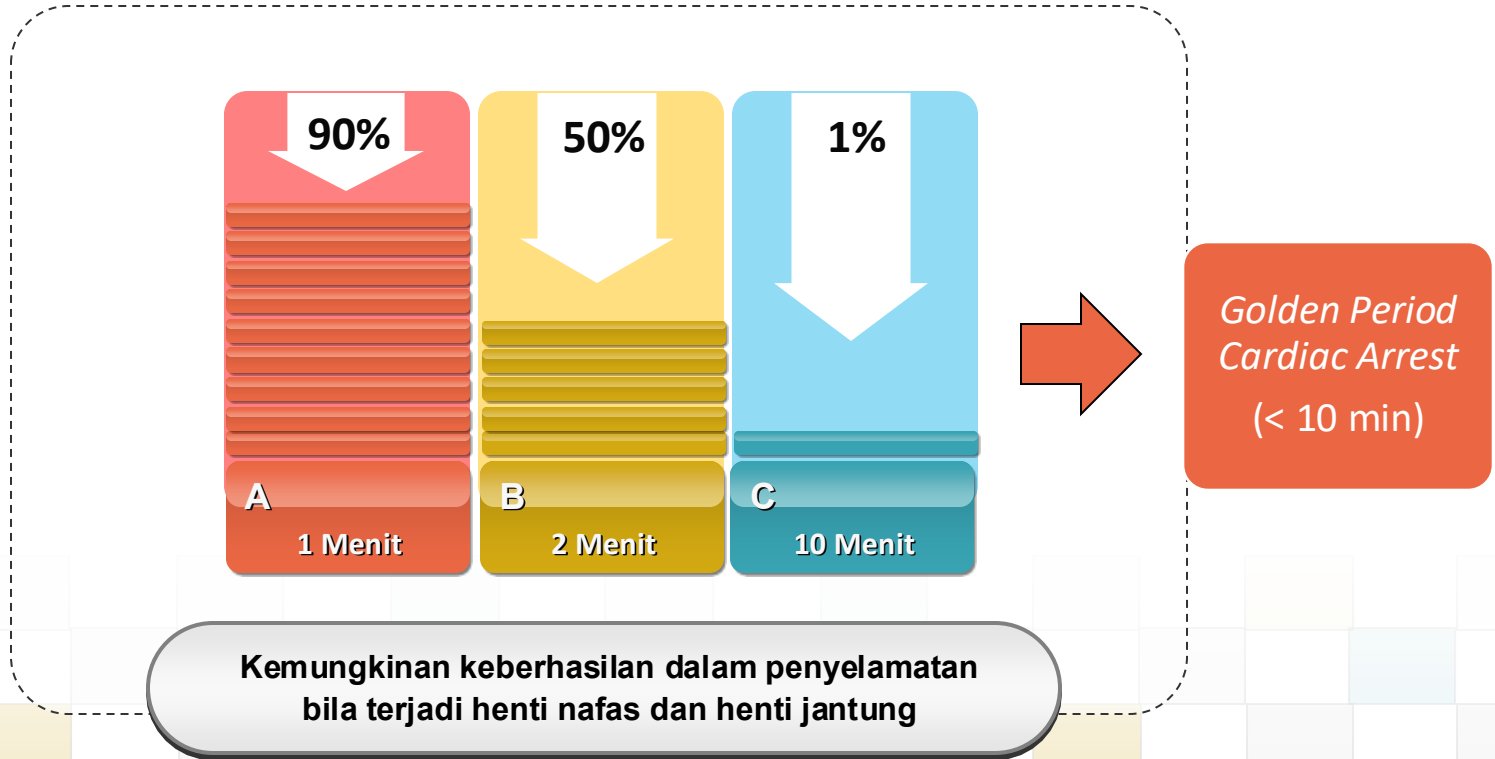


# Tujuan BHD / BLS





# Ketepatan Waktu Pelaksanaan



# Chains of Survival AHA 2020

## IHCA



## OHCA



# BLS for Healthcare Providers

## Quick Reference

C-A-B (Not A-B-C)



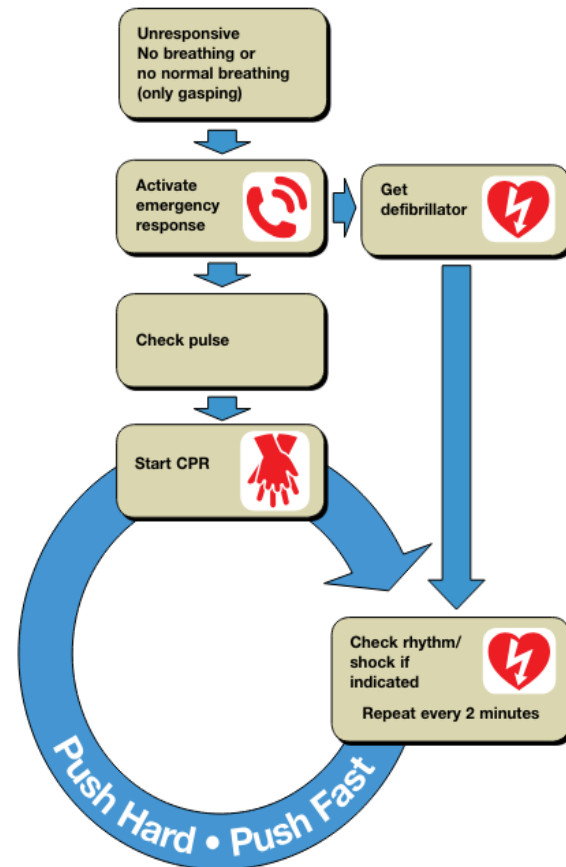
### BLS for Healthcare Providers

#### Critical Concepts

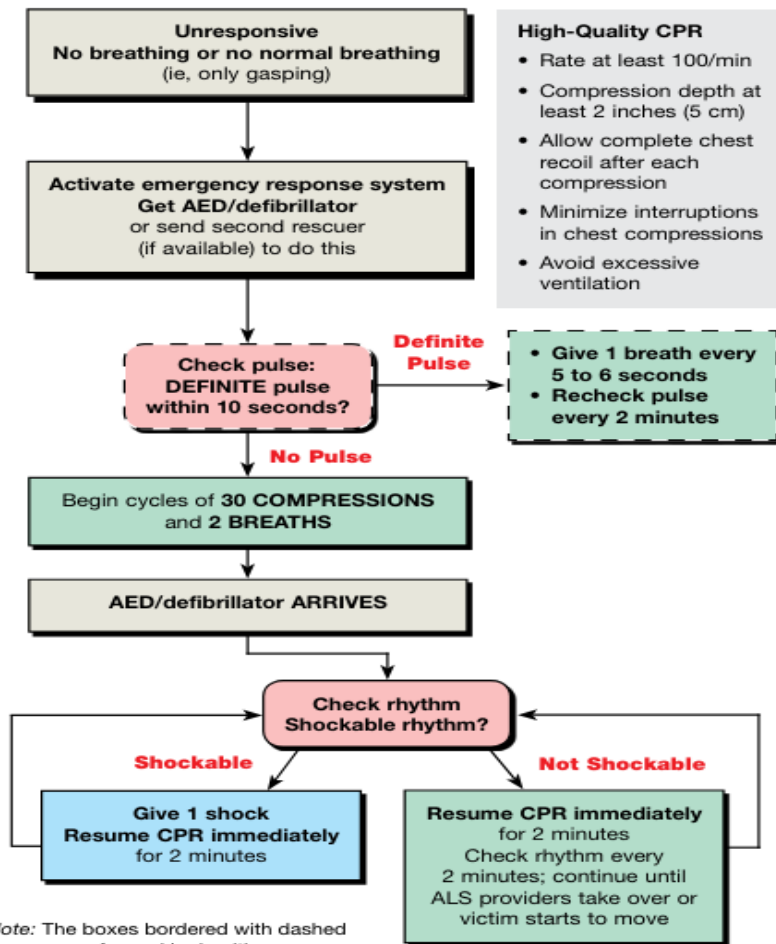
High-quality CPR improves a victim's chances of survival. The critical characteristics of high-quality CPR include

- **Start compressions within 10 seconds** of recognition of cardiac arrest.
- **Push hard, push fast:** Compress at a rate of at least 100/min with a depth of at least 2 inches (5 cm) for adults, approximately 2 inches (5 cm) for children, and approximately 1½ inches (4 cm) for infants.
- **Allow complete chest recoil** after each compression.
- **Minimize interruptions** in compressions (try to limit interruptions to <10 seconds).
- **Give effective breaths** that make the chest rise.
- **Avoid excessive ventilation.**

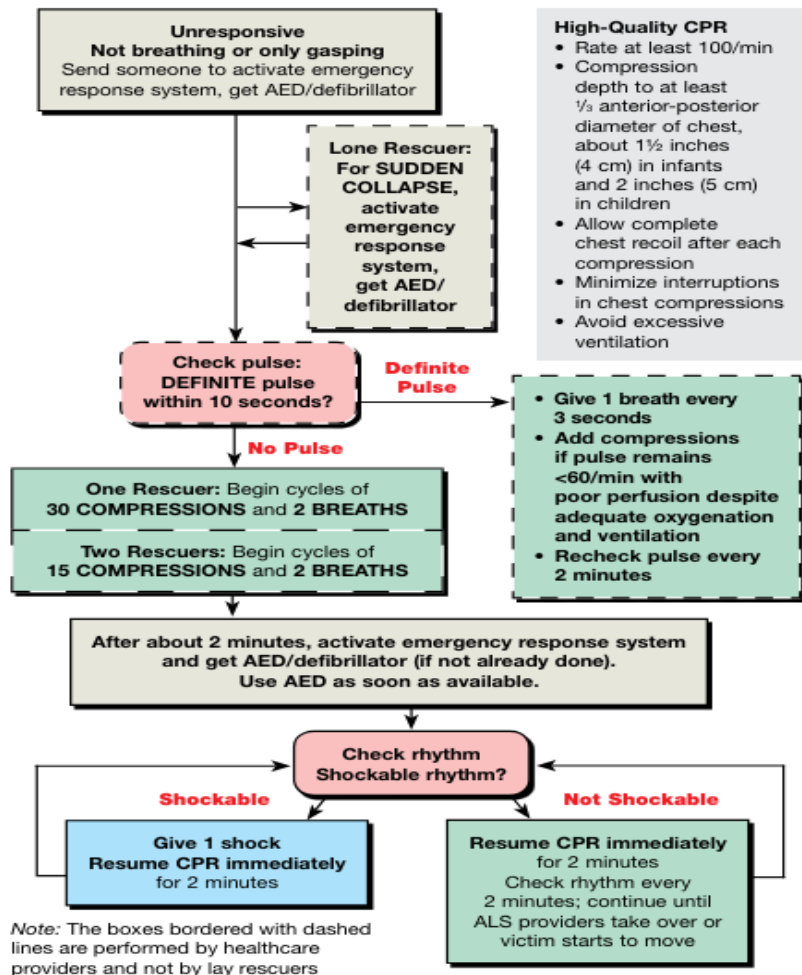
### Simplified Adult BLS Algorithm for Healthcare Providers



## Adult BLS Algorithm for Healthcare Providers



## Pediatric BLS Algorithm for Healthcare Providers



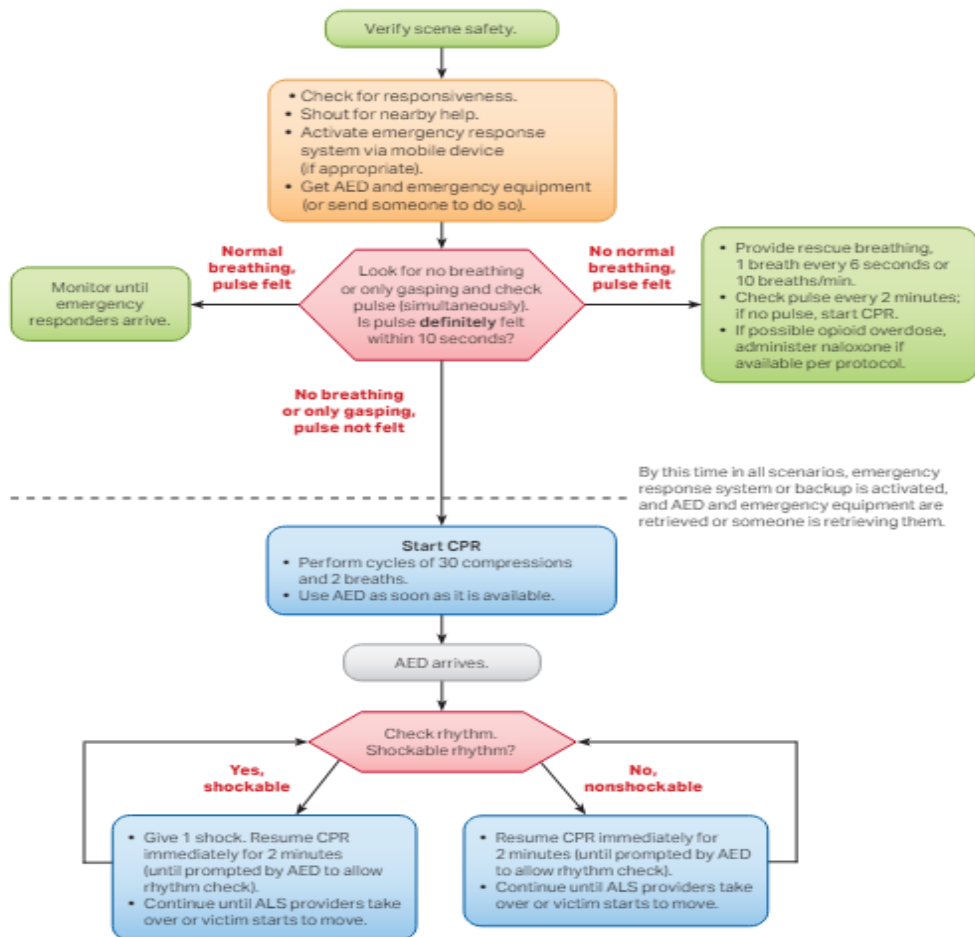
# BLS for Healthcare Professionals

## CABs of CPR

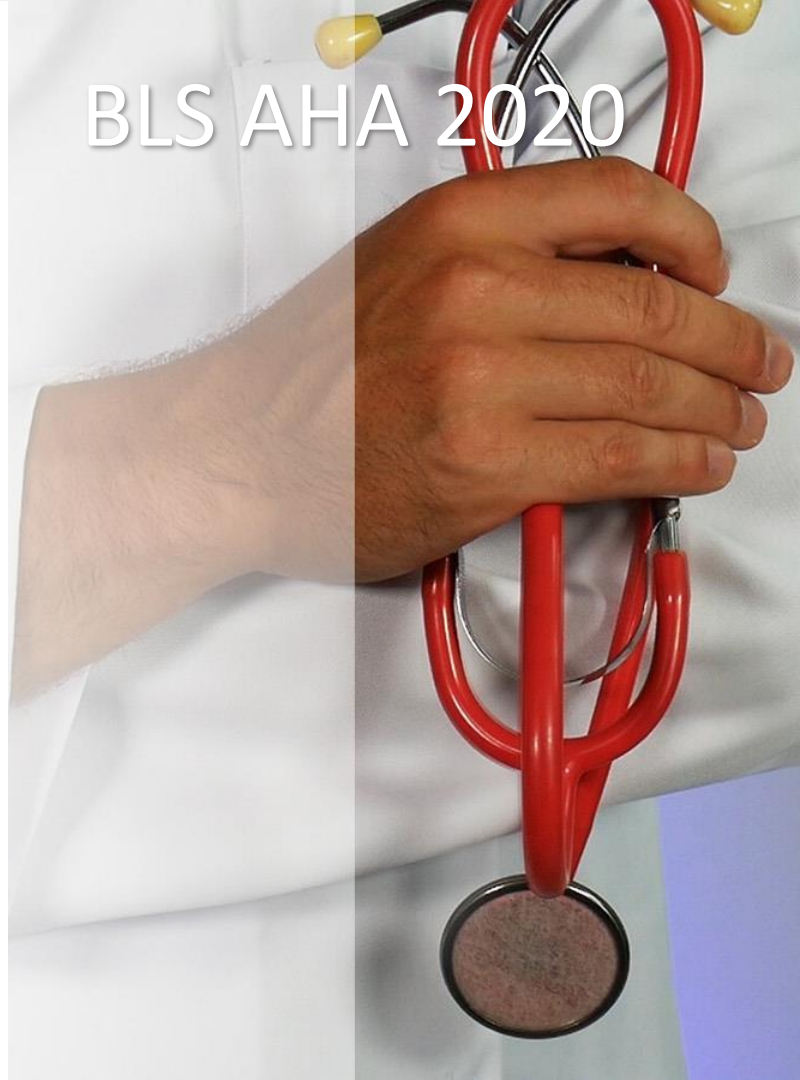
| CPR                                                                                     | ADULT & OLDER CHILD<br>(puberty and older)                                                                                                                                                                                             | CHILD<br>(1 year to signs of puberty)                                                                                                                  | INFANT<br>(up to 1 year old)                                                             |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Verify Scene Safety                                                                     | Do not enter an unsafe environment. Call 9-1-1                                                                                                                                                                                         |                                                                                                                                                        |                                                                                          |
| Check victim's responsiveness                                                           | If victim is unresponsive, shout for help.<br>Call 9-1-1 with mobile device, if available.<br>Send someone to find an AED.                                                                                                             |                                                                                                                                                        |                                                                                          |
| Activate 9-1-1                                                                          | If you are alone and do not have a mobile device, leave the victim to call 9-1-1 first, then look for an AED.<br>Return to perform CPR.                                                                                                | If you are alone and <b>WITNESS THE COLLAPSE</b><br><br>Leave the victim to call 9-1-1 first, and look for an AED.<br>Return to perform CPR.           |                                                                                          |
| Determine if victim is breathing & has a pulse                                          | Simultaneously check for breathing & pulse for no more than 10 seconds.<br>NOTE: agonal breaths are not considered signs of breathing<br>For children and infants, a pulse rate of less than 60 beats / minute is treated as no pulse. |                                                                                                                                                        |                                                                                          |
|                                                                                         | Check carotid artery on your side of the victim's the neck.                                                                                                                                                                            |                                                                                                                                                        | Check brachial artery on inside of the victim's upper arm near the armpit.               |
| Rescue Breathing                                                                        | 1 breath every 5-6 seconds<br>Check pulse every 2 minutes.                                                                                                                                                                             | 1 breath every 3-5 seconds<br>Check pulse again every 2 minutes<br>If pulse less than 60 beats per minute, or perfusion remains poor, add compressions |                                                                                          |
| If victim <b>has</b> a DEFINITE detectable pulse, but is not breathing                  | For suspected opioid overdose, administer naloxone, if available                                                                                                                                                                       |                                                                                                                                                        |                                                                                          |
| If victim has <b>NO</b> detectable pulse:<br><b>Begin CPR</b><br>Minimize interruptions | <b>1 rescuer:</b><br>30 compressions : 2 breaths<br><b>2+ rescuers:</b><br>30 compressions : 2 breaths<br><br>Use AED as soon as it arrives                                                                                            | <b>1 rescuer:</b><br>30 compressions : 2 breaths<br><b>2+ rescuers:</b><br>15 compressions : 2 breaths<br><br>Use the AED as soon as it arrives        |                                                                                          |
| Compression rate                                                                        | 100 - 120 compressions per minute                                                                                                                                                                                                      |                                                                                                                                                        |                                                                                          |
| Hand placement                                                                          | 2 hands on lower half of breastbone                                                                                                                                                                                                    | 1 hand or 2 hands on lower half of breastbone                                                                                                          | 1 rescuer: 2 fingers<br>2+ rescuers: 2 thumbs on center of chest, just below nipple line |
| Compression depth                                                                       | 2 to 2.4 inches (5-6 cm)                                                                                                                                                                                                               | 1/3 the depth of the chest - about 2 inches (5 cm)                                                                                                     | 1/3 the depth of the chest - about 1.5 inches (4 cm)                                     |
| Chest recoil                                                                            | Allow for full chest recoil after each compression                                                                                                                                                                                     |                                                                                                                                                        |                                                                                          |
| Minimize interruptions                                                                  | Limit interruptions in chest compressions to no more than 10 seconds                                                                                                                                                                   |                                                                                                                                                        |                                                                                          |
| Use the AED as soon as it arrives                                                       | Turn on AED and follow instructions. Never remove the AED.                                                                                                                                                                             |                                                                                                                                                        |                                                                                          |

Per the 2015 updated AHA ECC Guidelines





# BLS AHA 2020





# RESPONSE CHECK

## RESPON



CALL FOR  
HELP!



**BLS**

**Circulation**

**Airway**

**Breathing**



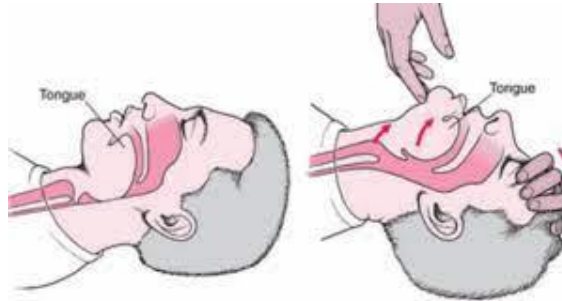
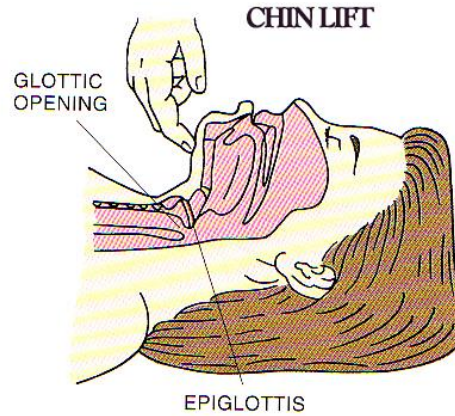
Secara bersamaan  
Look, Listen, Feel  
( < 10 detik)



# AIRWAY



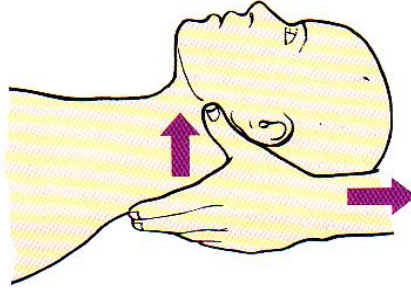
# TRIPLE AIRWAY MANEUVER



SINCE NECK MAY BE INJURED,  
DO NOT USE NORMAL METHOD  
OF OPENING AIRWAY...



USE MODIFIED JAW THRUST



## JAW THRUST



# Triple Airway Manoeuvre (video)





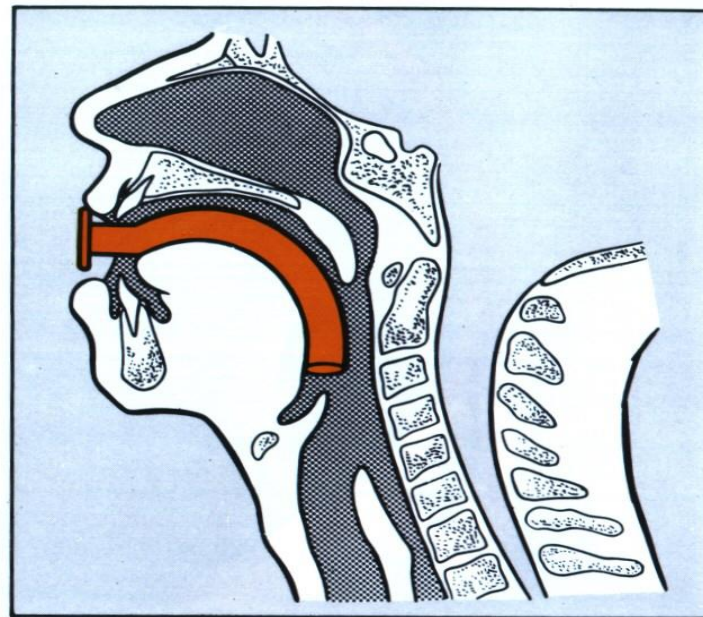
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124501



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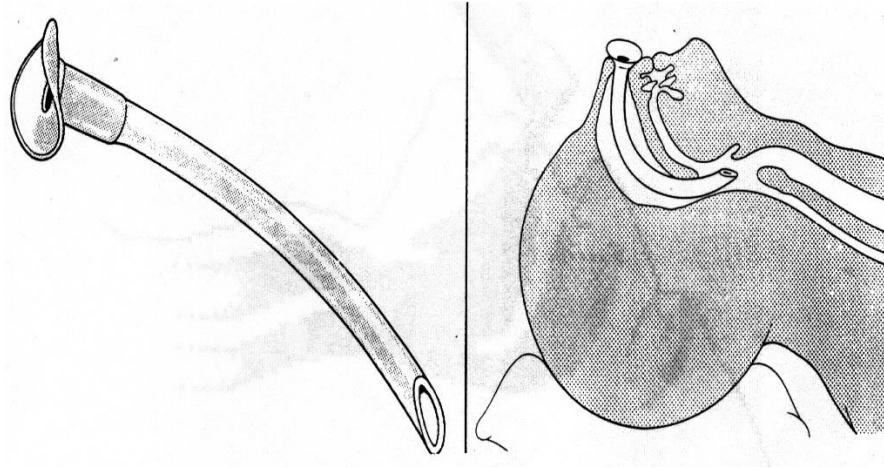
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## Teknik Inseri Oropharyngeal Airway

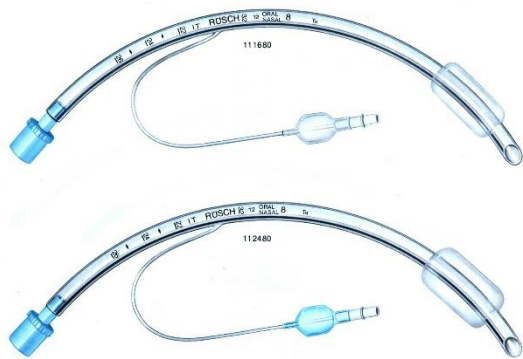


# PIPA NASOFARING ( NPA — NASOPHARYNGEAL AIRWAY)

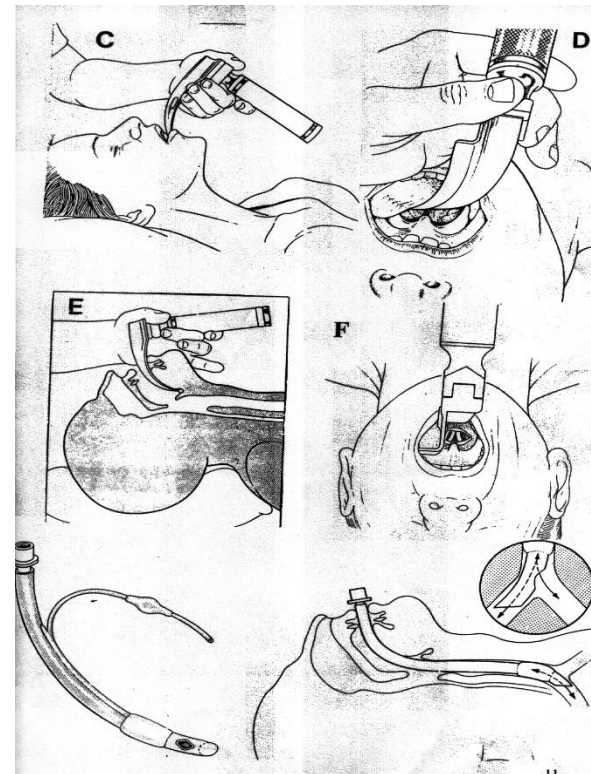
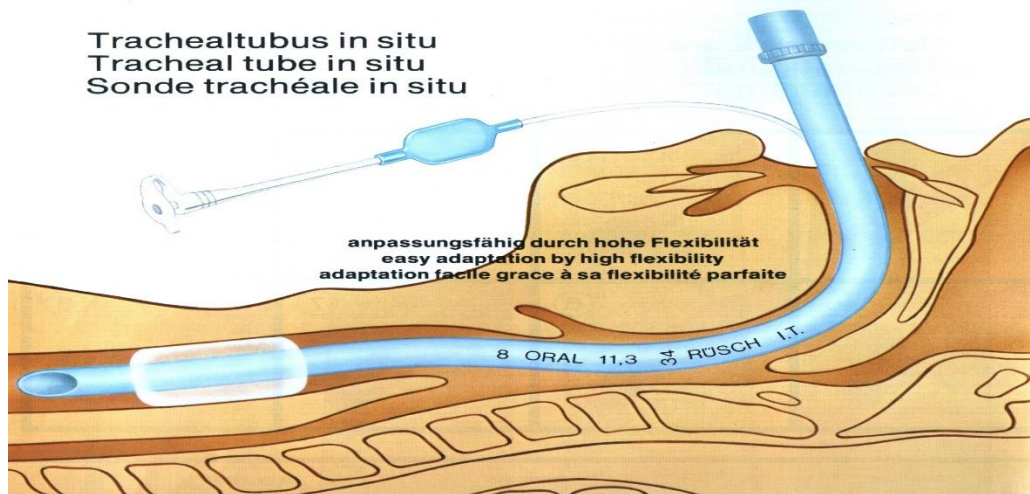


## TEKNIK INSERSI NASOPHARYNGEAL AIRWAY





Trachealtubus in situ  
Tracheal tube in situ  
Sonde trachéale in situ



# Malampati



Class I: soft palate, uvula, fauces, pillars visible  
No difficulty



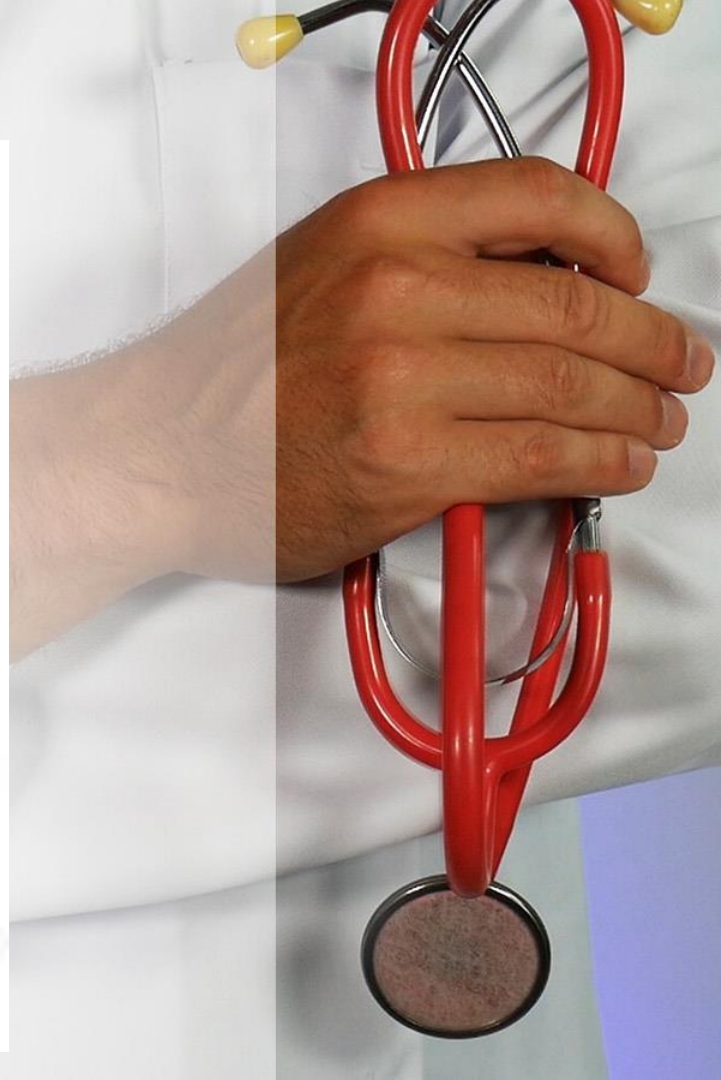
Class II: soft palate, uvula, fauces visible  
No difficulty

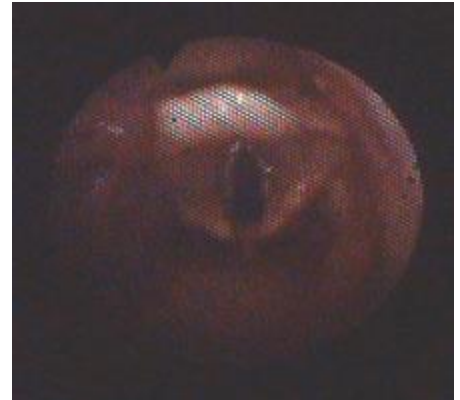
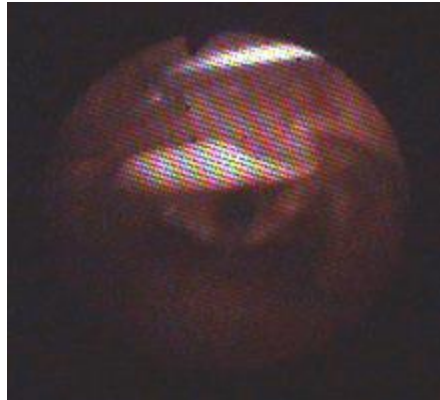
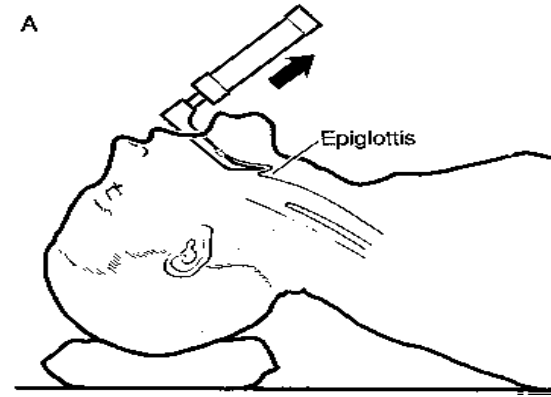


Class III: soft palate, base of uvula visible  
Moderate difficulty

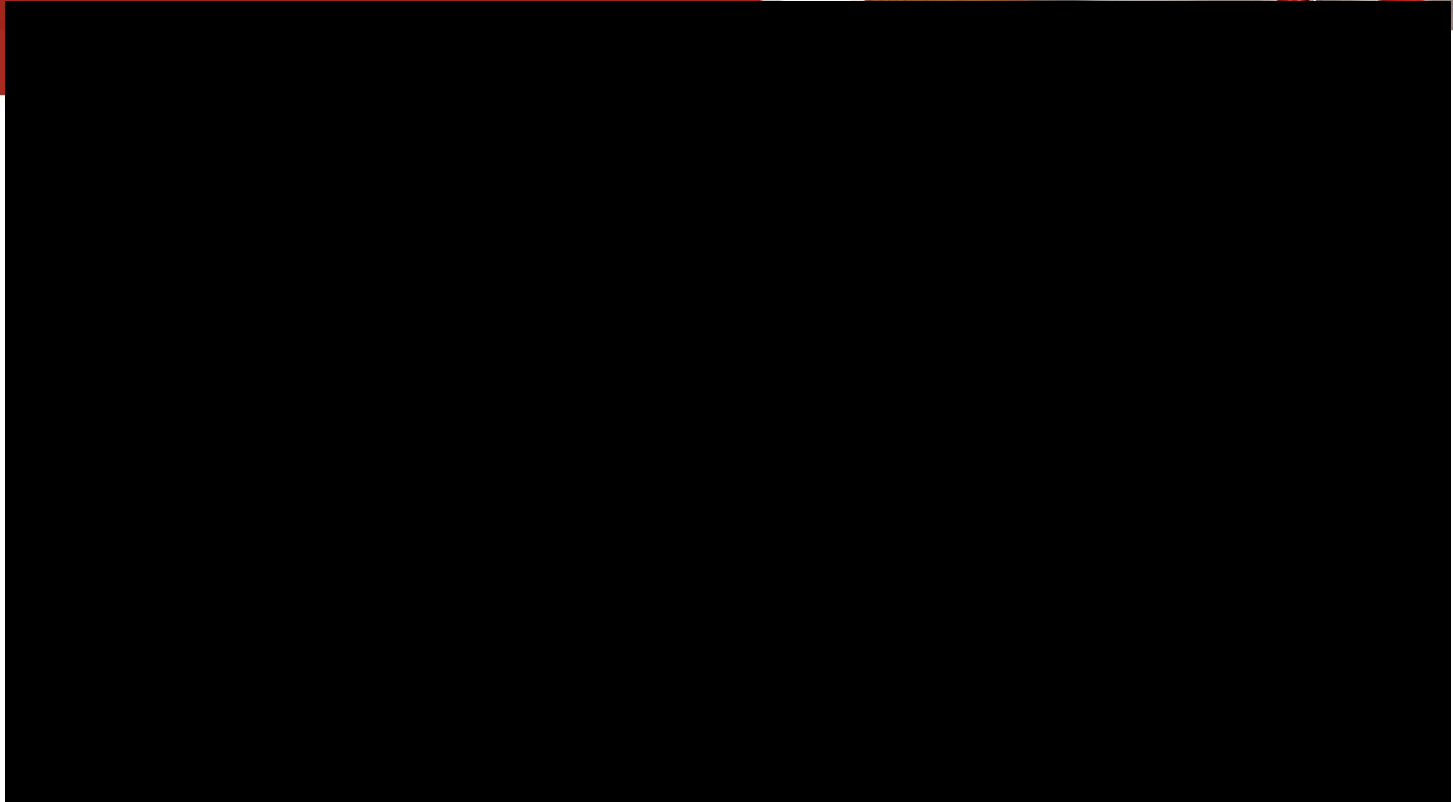


Class IV: hard palate only visible  
Severe difficulty

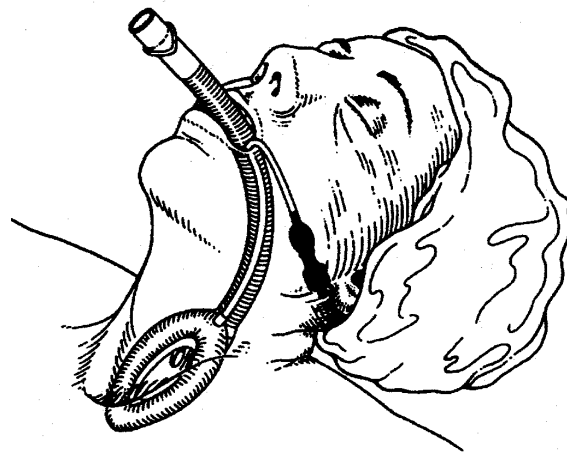
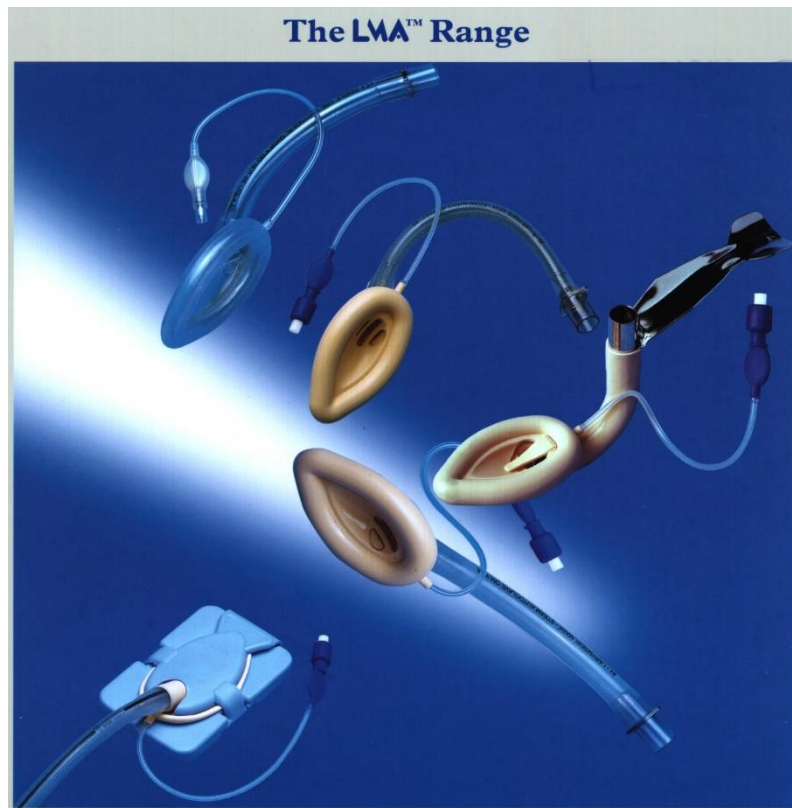




# Endotracheal Intubation (Video)



# LMA ( LARYNGEAL MASK AIRWAY )



**BREATHING**







## Adult Mouth-to-Mask and Bag-Mask Ventilation



**CIRCULATION**



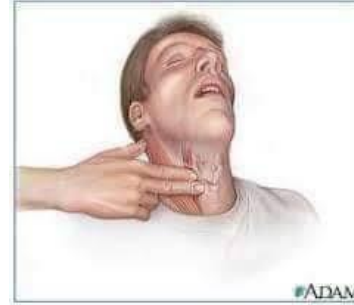


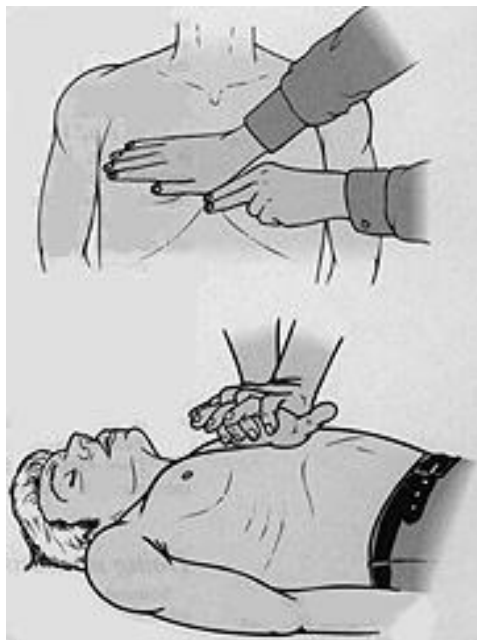
- Memastikan ada/tidaknya denyut nadi carotis
- Memberikan kompresi/tekanan/pijatan pada dinding dada untuk membuat jantung berkontraksi kembali
- Indikasi RJP → Henti jantung dan henti nafas

# LANGKAH RJP DEWASA

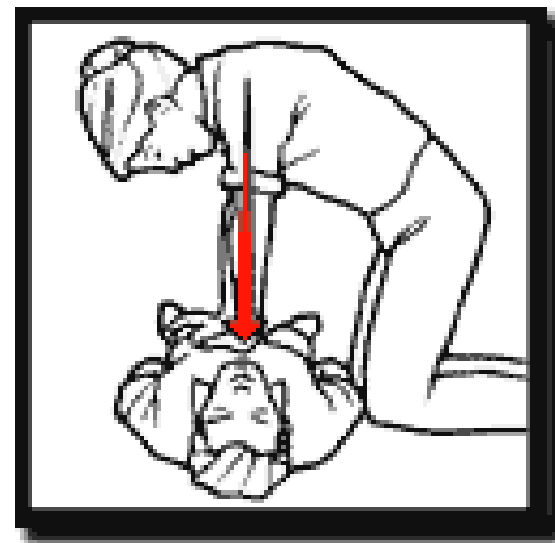
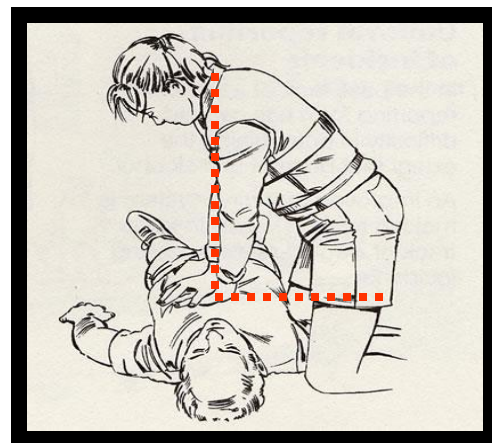
## Evaluasi Nadi / Tanda – Tanda Sirkulasi

- Berikan posisi *head tilt*, tentukan letak jakun atau bagian tengah tenggorokan korban dengan jari telunjuk dan tengah.
  - Geser jari anda ke cekungan di sisi leher yang terdekat dengan anda (Lokasi nadi karotis)
  - Tekan dan raba dengan hati-hati nadi karotis selama 10 detik, dan perhatikan tanda-tanda sirkulasi (kesadaran, gerakan, pernafasan, atau batuk)
- Jika ada denyut nadi maka dilanjutkan dengan memberikan bantuan pernafasan, tetapi jika tidak ditemukan denyut nadi, maka dilanjutkan dengan melakukan kompresi dada

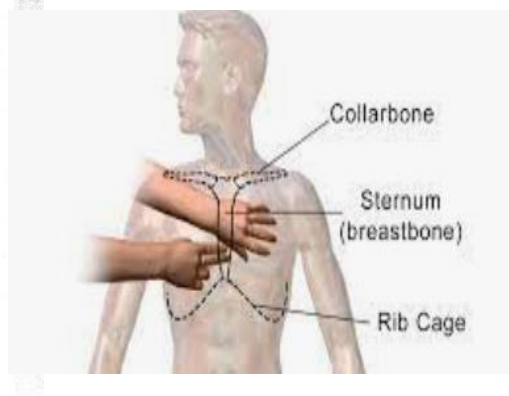
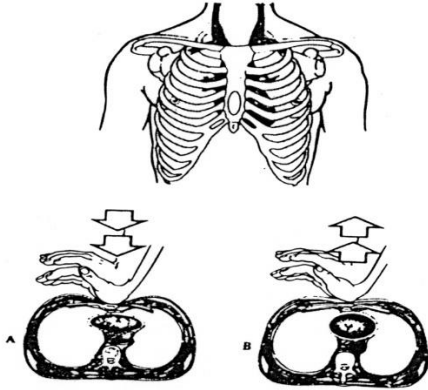




shutterstock.com - 1900521367



# TITIK TUMPU KOMPRESI



| Recommendations for Positioning and Location for CPR |      |                                                                                                                                                                                                                                                              |
|------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COR                                                  | LOE  | Recommendations                                                                                                                                                                                                                                              |
| 1                                                    | C-LD | 1. When providing chest compressions, <u>the rescuer should place the heel of one hand on the center (middle) of the victim's chest (the lower half of the sternum) and the heel of the other hand on top of the first so that the hands are overlapped.</u> |
| 1                                                    | C-EO | 2. Resuscitation should generally be conducted where the victim is found, as long as high-quality CPR can be administered safely and effectively in that location.                                                                                           |
| 2a                                                   | C-LD | 3. It is preferred to perform CPR <u>on a firm surface</u> and with the victim in the supine position, when feasible.                                                                                                                                        |
| 2b                                                   | C-LD | 4. When the victim cannot be placed in the supine position, it may be reasonable for rescuers to provide CPR with the victim in the prone position, particularly in hospitalized patients with an advanced airway in place.                                  |

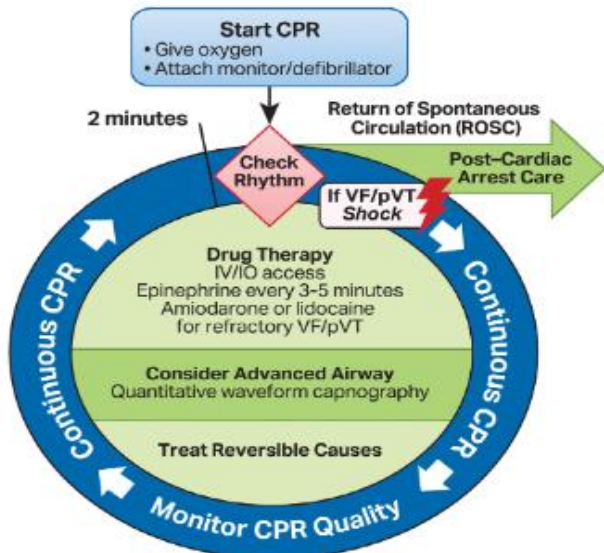
| Recommendations for Compression Depth and Rate |      |                                                                                                                                                                                                                              |
|------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COR                                            | LOE  | Recommendations                                                                                                                                                                                                              |
| 1                                              | B-NR | 1. During manual CPR, rescuers should perform chest compressions to a depth of <u>at least 2 inches, or 5 cm, for an average adult while avoiding excessive chest compression depths (greater than 2.4 inches, or 6 cm).</u> |
| 2a                                             | B-NR | 2. In adult victims of cardiac arrest, it is reasonable for rescuers to perform chest compressions at a rate of <u>100 to 120/min.</u>                                                                                       |
| 2a                                             | C-LD | 3. It can be beneficial for rescuers to avoid leaning on the chest between compressions to allow complete chest wall recoil for adults in cardiac arrest.                                                                    |
| 2b                                             | C-EO | 4. It may be reasonable to perform chest compressions so that chest compression and recoil/relaxation times are approximately equal.                                                                                         |



| Recommendations for Compression-to-Ventilation Ratio: ALS |      |                                                                                                                                                                                                                        |
|-----------------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COR                                                       | LOE  | Recommendations                                                                                                                                                                                                        |
| 2a                                                        | B-R  | 1. Before placement of an advanced airway (supraglottic airway or tracheal tube), it is reasonable for healthcare providers to perform CPR with cycles of 30 compressions and 2 breaths.                               |
| 2b                                                        | B-R  | 2. It may be reasonable for EMS providers to use a rate of 10 breaths per minute (1 breath every 6 s) to provide asynchronous ventilation during continuous chest compressions before placement of an advanced airway. |
| 2b                                                        | C-LD | 3. If an advanced airway is in place, it may be reasonable for the provider to deliver 1 breath every 6 s (10 breaths/min) while continuous chest compressions are being performed.                                    |
| 2b                                                        | C-LD | 4. It may be reasonable to initially use minimally interrupted chest compressions (ie, delayed ventilation) for witnessed shockable OHCA as part of a bundle of care.                                                  |



## Adult Cardiac Arrest Circular Algorithm



### CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If PETCO<sub>2</sub> is low or decreasing, reassess CPR quality.

### Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

### Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
- or
- **Lidocaine IV/IO dose:** First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

### Advanced Airway

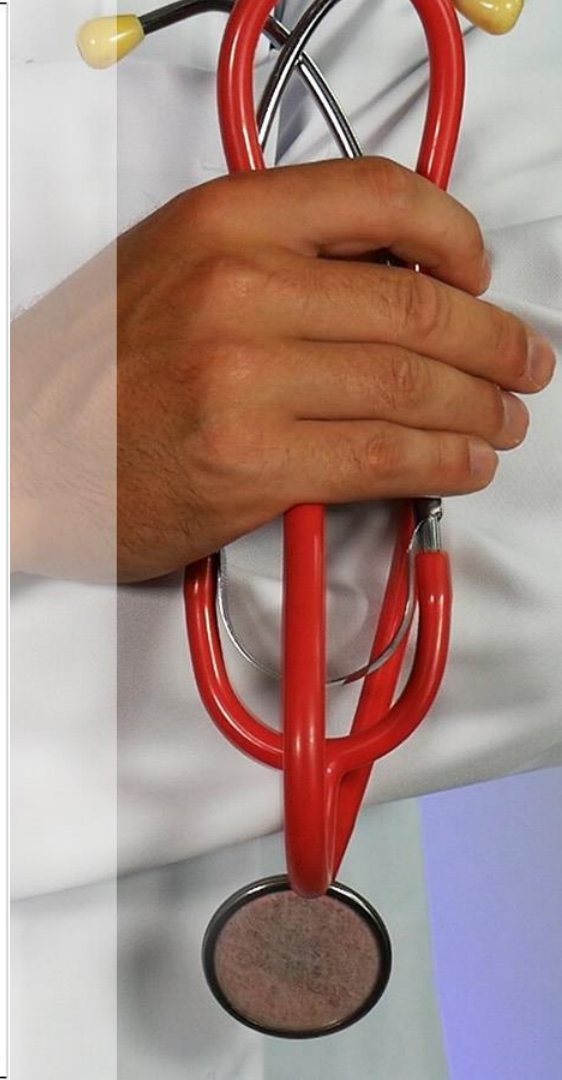
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

### Return of Spontaneous Circulation (ROSC)

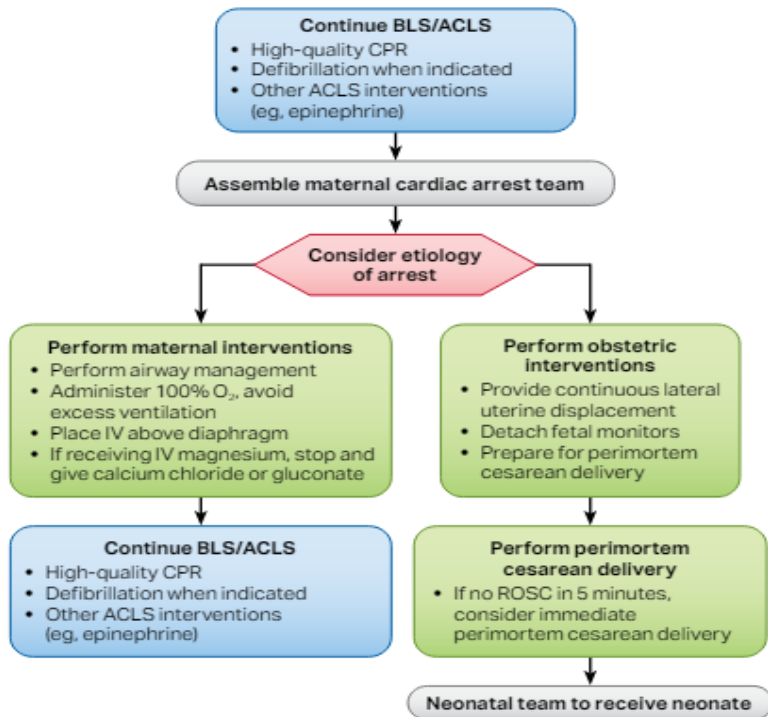
- Pulse and blood pressure
- Abrupt sustained increase in PETCO<sub>2</sub> (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

### Reversible Causes

- |                           |                         |
|---------------------------|-------------------------|
| • Hypovolemia             | • Tension pneumothorax  |
| • Hypoxia                 | • Tamponade, cardiac    |
| • Hydrogen ion (acidosis) | • Toxins                |
| • Hypo-/hyperkalemia      | • Thrombosis, pulmonary |
| • Hypothermia             | • Thrombosis, coronary  |



## Cardiac Arrest in Pregnancy In-Hospital ACLS Algorithm



### Maternal Cardiac Arrest

- Team planning should be done in collaboration with the obstetric, neonatal, emergency, anesthesiology, intensive care, and cardiac arrest services.
- Priorities for pregnant women in cardiac arrest should include provision of high-quality CPR and relief of aortocaval compression with lateral uterine displacement.
- The goal of perimortem cesarean delivery is to improve maternal and fetal outcomes.
- Ideally, perform perimortem cesarean delivery in 5 minutes, depending on provider resources and skill sets.

### Advanced Airway

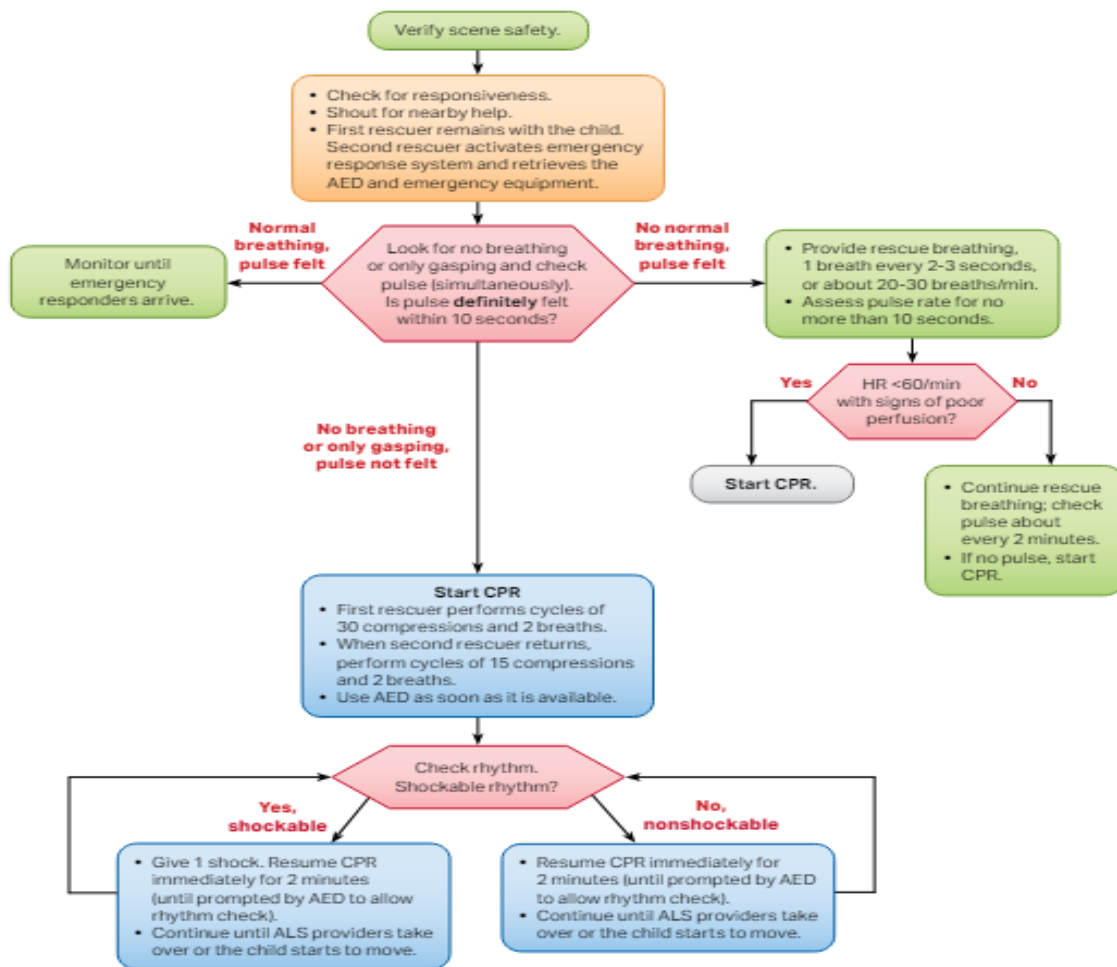
- In pregnancy, a difficult airway is common. Use the most experienced provider.
- Provide endotracheal intubation or supraglottic advanced airway.
- Perform waveform capnography or capnometry to confirm and monitor ET tube placement.
- Once advanced airway is in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions.

### Potential Etiology of Maternal Cardiac Arrest

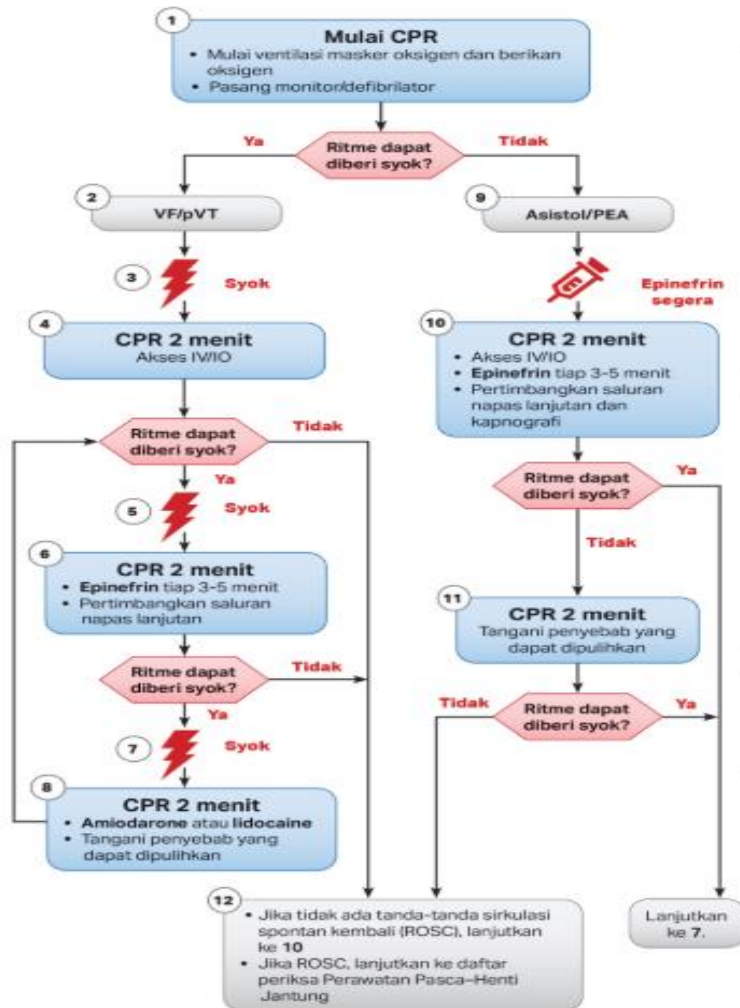
- A Anesthetic complications
- B Bleeding
- C Cardiovascular
- D Drugs
- E Embolic
- F Fever
- G General nonobstetric causes of cardiac arrest (H's and T's)
- H Hypertension

Henti  
Jantung  
Maternal

## Pediatric Basic Life Support Algorithm for Healthcare Providers—2 or More Rescuers



Henti  
Jantung  
pada Anak  
(1 dan 2/> penolong)



#### Kualitas CPR

- Tekan kuat ( $\geq \frac{1}{2}$  dari diameter anteroposterior dada) dan cepat (100-120/menit) dan biarkan rekoi dada selesai
- Minimalisir interupsi dalam kompresi
- Ganti kompresor tiap 2 menit, atau lebih awal jika kelelahan
- Jika tidak ada saluran napas lanjutan, rasio ventilasi-kompresi 1:2
- Jika ada saluran napas lanjutan, berikan kompresi terus-menerus dan berikan napas setiap 2-3 detik

#### Energi Syok untuk Defibrilasi

- Syok pertama 2 J/kg
- Syok kedua 4 J/kg
- Syok seterusnya  $\geq 4$  J/kg, maksimum 10 J/kg atau dosis dewasa

#### Terapi Obat

- **Dosis IV/IO epinefrin:** 0,01 mg/kg (0,1 mL/kg dari konsentrasi 0,1 mg/mL). Dosis maks 1 mg. Ulangi tiap 3-5 menit. Jika tidak ada akses IO/IV, boleh memberikan dosis endotrakeal: 0,1 mg/kg (0,1 mL/kg dari konsentrasi 1 mg/mL).
- **Dosis IV/IO Amiodarone:** 5 mg/kg bolus selama henti jantung. Dapat diulang hingga 3 dosis total untuk VF refraktori/VT tanpa denyut atau
- **Dosis IV/IO lidocaine:** Awal: Dosis pemuatan 1 mg/kg

#### Saluran Napas Lanjutan

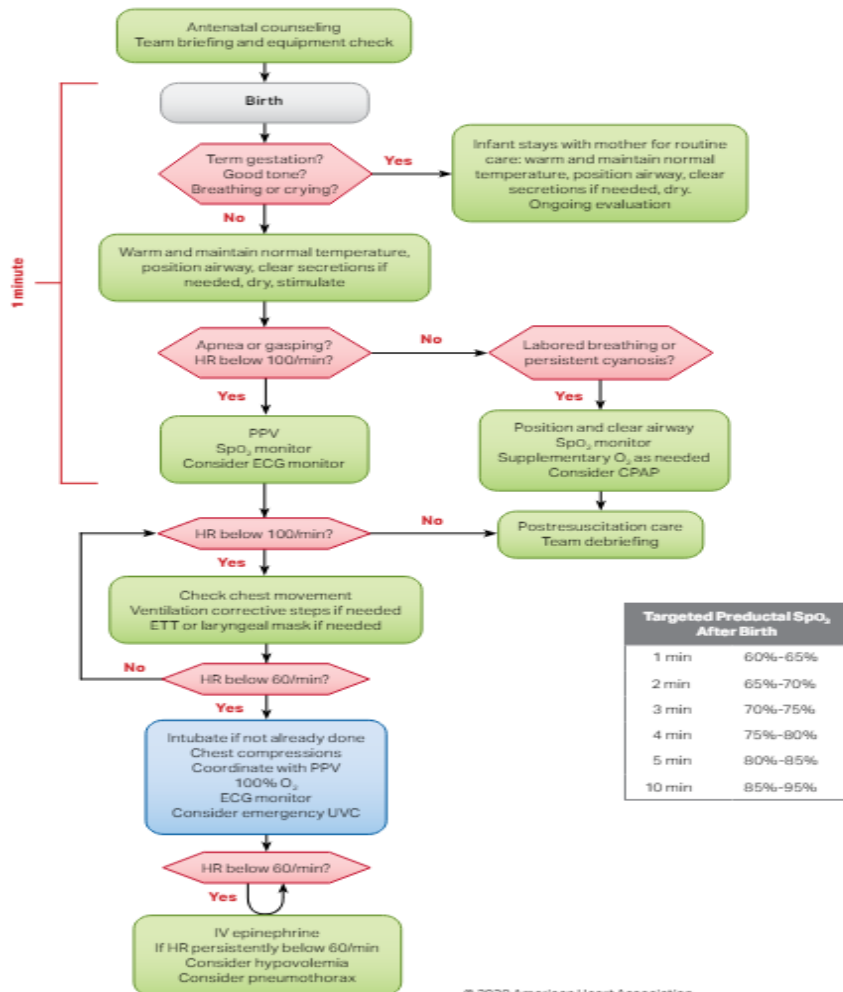
- Intubasi endotrakeal atau saluran napas lanjutan supraglotik
- Kapnografi gelombang atau kapnometri untuk mengonfirmasi dan memantau penempatan pipa ET

#### Penyebab yang Dapat Dipulihkan

- Hipovolemia
- Hipoksia
- Ion Hidrogen (asidosis)
- Hipoglikemia
- Hipo-/hiperkalemia
- Hipotermia
- Tensi pneumotoraks
- Tamponade, jantung
- Toksin
- Trombosis, paru
- Trombosis, koroner

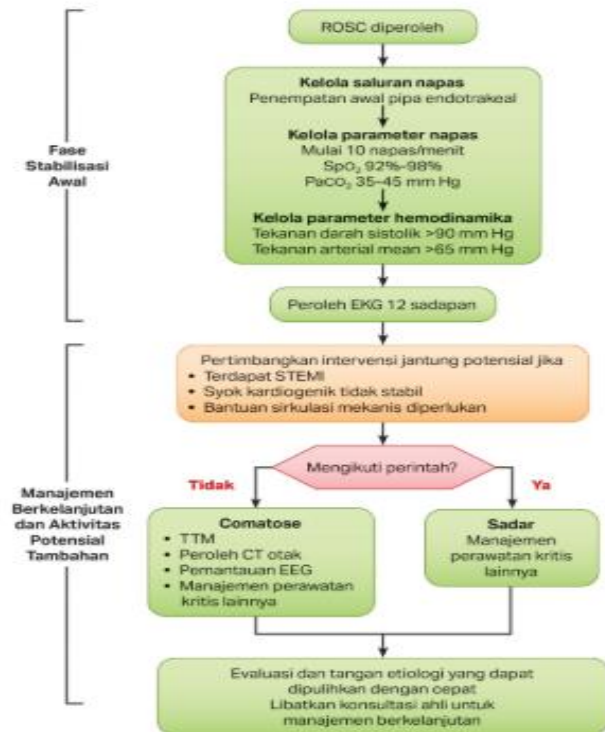
Henti  
Jantung  
pada Anak

# Neonatal Resuscitation Algorithm



© 2020 American Heart Association

Henti  
Jantung  
Neonatal



#### Fase Stabilisasi Awal

Resusitasi tetap berlangsung selama fase pasca-ROSC, dan banyak hal dari aktivitas ini dapat terjadi bersamaan. Akan tetapi, jika memerlukan penentuan prioritas, ikuti langkah-langkah berikut:

- **Manajemen saluran napas:** Kapnografi gelombang atau kapnometri untuk mengonfirmasi dan memantau penempatan pipa endotrakeal
- **Kelola parameter napas:** Titrasi FiO<sub>2</sub> untuk SpO<sub>2</sub> 92%-98%; mulai pada 10 napas/menit; titrasi ke Paco<sub>2</sub> sebanyak 35-45 mm Hg
- **Kelola parameter hemodinamik:** Berikan kristaloid dan/atau vasopressor atau inotropik untuk tekanan darah sistolik sasaran >90 mm Hg atau tekanan arterial mean >65 mm Hg

#### Manajemen Berkelanjutan dan Aktivitas Potensial Tambahan

Evaluasi ini harus dilakukan secara bersamaan sehingga keputusan tentang manajemen suhu bertarget (TTM) menerima prioritas tinggi sebagai intervensi jantung.

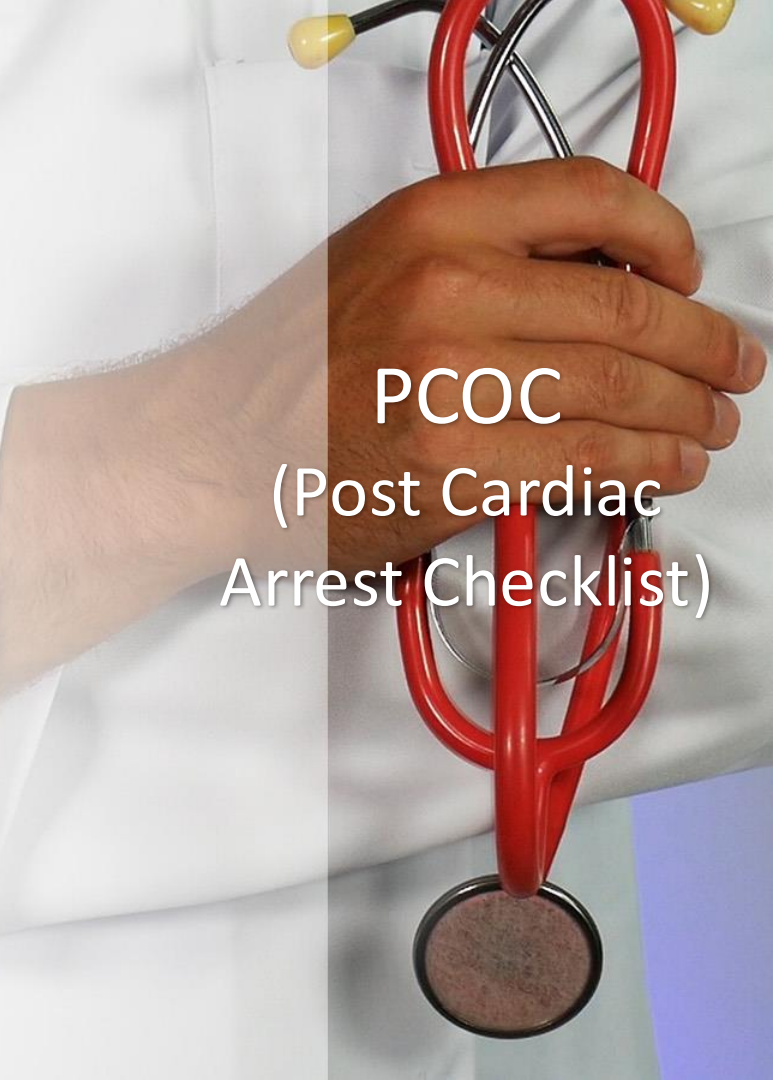
- **Intervensi jantung potensial:** Evaluasi awal dari elektrokardiogram 12 sadapan (EKG); pertimbangkan hemodinamika untuk keputusan tentang intervensi jantung
- **TTM:** Jika pasien tidak mengikuti perintah, mulai TTM sesegera mungkin; mulai pada 32-36°C selama 24 jam menggunakan perangkat pendinginan dengan feedback loop
- **Manajemen perawatan kritis lainnya**
  - Pantau suhu inti terus-menerus (esofageal, rektal, kemih)
  - Pertahankan normoxia, normocapnia, euglycemia
  - Lakukan pemantauan elektroensefalogram (EEG) terus-menerus atau berkala
  - Berikan ventilasi yang melindungi paru

#### Hi dan T

Hipovolemia  
Hipoksia  
Ion Hidrogen (asidosis)  
Hipokalemia/hiperkalemia  
Hipotermia  
Tensi pneumotoraks  
Tamponade jantung  
Toksin  
Trombosis paru  
Trombosis koroner

# Algoritma Pasca ROSC

| Components of Post-Cardiac Arrest Care                                                                                                                        | Check                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Oxygenation and ventilation</b>                                                                                                                            |                          |
| Measure oxygenation and target normoxemia 94%-99% (or child's normal/appropriate oxygen saturation).                                                          | <input type="checkbox"/> |
| Measure and target $Paco_2$ appropriate to the patient's underlying condition and limit exposure to severe hypercapnia or hypocapnia.                         | <input type="checkbox"/> |
| <b>Hemodynamic monitoring</b>                                                                                                                                 |                          |
| Set specific hemodynamic goals during post-cardiac arrest care and review daily.                                                                              | <input type="checkbox"/> |
| Monitor with cardiac telemetry.                                                                                                                               | <input type="checkbox"/> |
| Monitor arterial blood pressure.                                                                                                                              | <input type="checkbox"/> |
| Monitor serum lactate, urine output, and central venous oxygen saturation to help guide therapies.                                                            | <input type="checkbox"/> |
| Use parenteral fluid bolus with or without inotropes or vasopressors to maintain a systolic blood pressure greater than the fifth percentile for age and sex. | <input type="checkbox"/> |
| <b>Targeted temperature management (TTM)</b>                                                                                                                  |                          |
| Measure and continuously monitor core temperature.                                                                                                            | <input type="checkbox"/> |
| Prevent and treat fever immediately after arrest and during rewarming.                                                                                        | <input type="checkbox"/> |
| If patient is comatose apply TTM (32°C-34°C) followed by (36°C-37.5°C) or only TTM (36°C-37.5°C).                                                             | <input type="checkbox"/> |
| Prevent shivering.                                                                                                                                            | <input type="checkbox"/> |
| Monitor blood pressure and treat hypotension during rewarming.                                                                                                | <input type="checkbox"/> |
| <b>Neuromonitoring</b>                                                                                                                                        |                          |
| If patient has encephalopathy and resources are available, monitor with continuous electroencephalogram.                                                      | <input type="checkbox"/> |
| Treat seizures.                                                                                                                                               | <input type="checkbox"/> |
| Consider early brain imaging to diagnose treatable causes of cardiac arrest.                                                                                  | <input type="checkbox"/> |
| <b>Electrolytes and glucose</b>                                                                                                                               |                          |
| Measure blood glucose and avoid hypoglycemia.                                                                                                                 | <input type="checkbox"/> |
| Maintain electrolytes within normal ranges to avoid possible life-threatening arrhythmias.                                                                    | <input type="checkbox"/> |
| <b>Sedation</b>                                                                                                                                               |                          |
| Treat with sedatives and anxiolytics.                                                                                                                         | <input type="checkbox"/> |
| <b>Prognosis</b>                                                                                                                                              |                          |
| Always consider multiple modalities (clinical and other) over any single predictive factor.                                                                   | <input type="checkbox"/> |
| Remember that assessments may be modified by TTM or induced hypothermia.                                                                                      | <input type="checkbox"/> |
| Consider electroencephalogram in conjunction with other factors within the first 7 days after cardiac arrest.                                                 | <input type="checkbox"/> |
| Consider neuroimaging such as magnetic resonance imaging during the first 7 days.                                                                             | <input type="checkbox"/> |



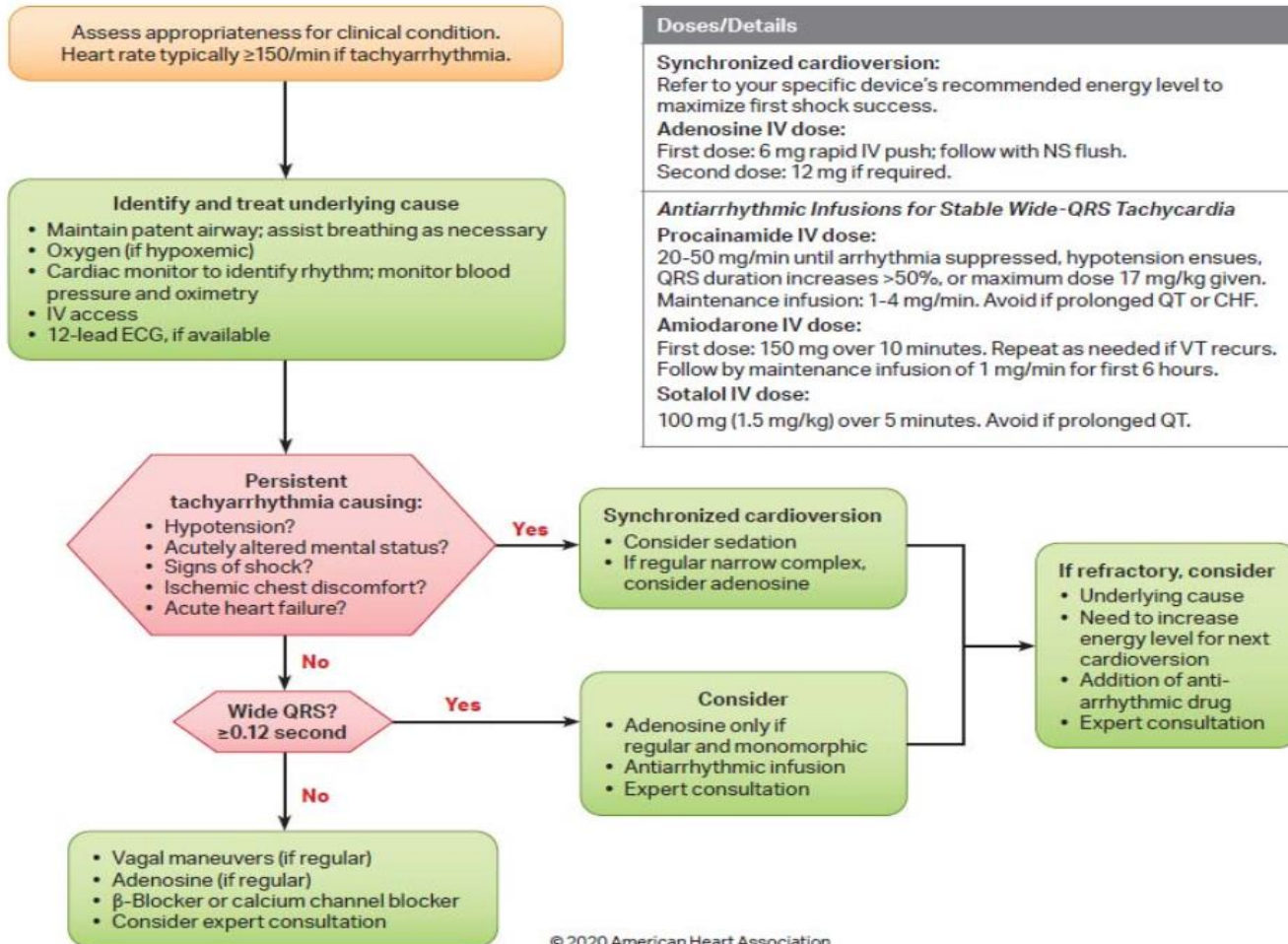
PCOC  
(Post Cardiac  
Arrest Checklist)

### **Tachycardia** (With Pulse-Heart Rate >150)

- IV/O2/Monitor/VS/12 lead ECG are all helpful
- Identify and treat reversible causes, consider expert consultation
- Determine if ***Stable or Unstable***
  - ***Unstable*** with hypotension, altered mental status, signs of shock, chest pain, acute heart failure
    - Sedate and Sync Cardiovert (**Refer to device-specific recommendation**)
    - Synchronized Cardioversion: 75J, 120J, 150J
  - ***Stable*** – IV, support, 12 lead ECG, and seek expert consultation
- Determine if rhythm is ***Narrow or Wide, Regular or Irregular***
  - ***Narrow/Regular*** (possible SVT)
    - Vagal maneuvers
    - **Adenosine (6 mg-fast-NS flush)**, May repeat @ 12 mg x2
  - Rate control with diltiazem
  - ***Wide/Regular*** (probably VT)
    - Consider **Adenosine 6 mg** rapid IVP; follow with NS flush
    - **Amiodarone 150 mg/100 ml** over 10 minutes, repeat as needed, follow by maintenance of 1mg/min for 6 hours
    - **Procainamide 20-50 mg/min** until arrhythmia suppressed, hypotension ensues, QRS duration increases >50%, or max dose 17 mg/kg
    - Consider expert consultation



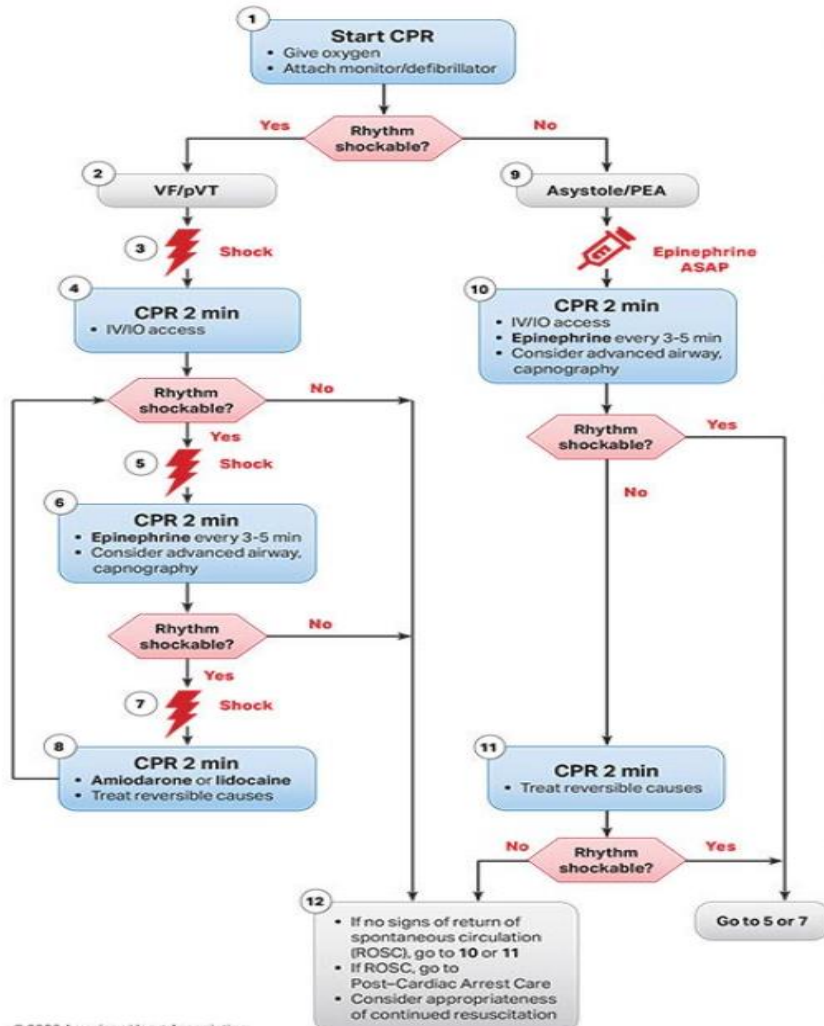
## Adult Tachycardia With a Pulse Algorithm



Algoritma  
Takikardi  
Dewasa



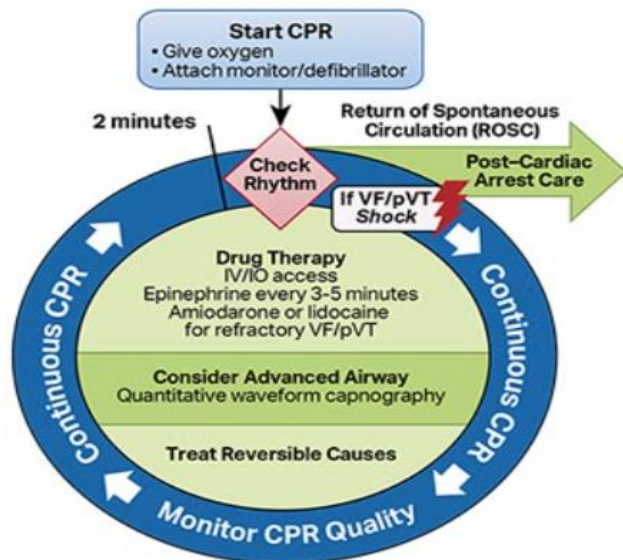
# Adult Cardiac Arrest Algorithm (VF/pVT/Asystole/PEA)



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CPR Quality</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <ul style="list-style-type: none"> <li>Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.</li> <li>Minimize interruptions in compressions.</li> <li>Avoid excessive ventilation.</li> <li>Change compressor every 2 minutes, or sooner if fatigued.</li> <li>If no advanced airway, 30:2 compression-ventilation ratio.</li> <li>Quantitative waveform capnography                             <ul style="list-style-type: none"> <li>If PETCO<sub>2</sub> is low or decreasing, reassess CPR quality.</li> </ul> </li> </ul> |
| <b>Shock Energy for Defibrillation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li><b>Biphasic:</b> Manufacturer recommendation (eg, initial dose of 120-200 J; if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.</li> <li><b>Monophasic:</b> 360 J</li> </ul>                                                                                                                                                                                                                                                                               |
| <b>Drug Therapy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li><b>Epinephrine IV/IO dose:</b> 1 mg every 3-5 minutes</li> <li><b>Amiodarone IV/IO dose:</b> First dose: 300 mg bolus. Second dose: 150 mg.</li> <li><b>Lidocaine IV/IO dose:</b> First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.</li> </ul>                                                                                                                                                                                                                                                                               |
| <b>Advanced Airway</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>Endotracheal intubation or supraglottic advanced airway</li> <li>Waveform capnography or capnometry to confirm and monitor ET tube placement</li> <li>Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions</li> </ul>                                                                                                                                                                                                                                                |
| <b>Return of Spontaneous Circulation (ROSC)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ul style="list-style-type: none"> <li>Pulse and blood pressure</li> <li>Abrupt sustained increase in PETCO<sub>2</sub> (typically &gt;40 mm Hg)</li> <li>Spontaneous arterial pressure waves with intra-arterial monitoring</li> </ul>                                                                                                                                                                                                                                                                                                                                 |
| <b>Reversible Causes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"> <li>Hypovolemia</li> <li>Hypoxia</li> <li>Hydrogen ion (acidosis)</li> <li>Hypo-/hyperkalemia</li> <li>Hypothermia</li> <li>Tension pneumothorax</li> <li>Tamponade, cardiac</li> <li>Toxins</li> <li>Thrombosis, pulmonary</li> <li>Thrombosis, coronary</li> </ul>                                                                                                                                                                                                                                                                 |

Algoritma  
VF/pVT

## Adult Cardiac Arrest Circular Algorithm



### CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If PETCO<sub>2</sub> is low or decreasing, reassess CPR quality.

### Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

### Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
- **Lidocaine IV/IO dose:** First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

### Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

### Return of Spontaneous Circulation (ROSC)

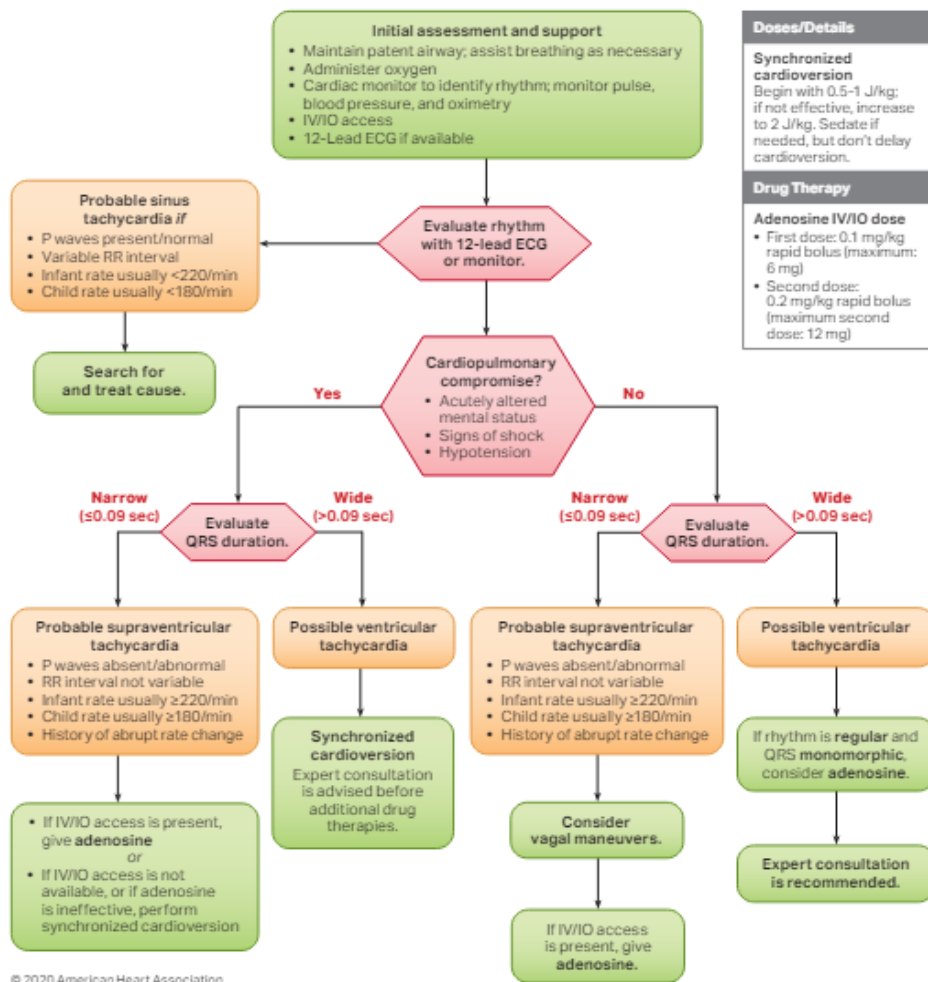
- Pulse and blood pressure
- Abrupt sustained increase in PETCO<sub>2</sub> (typically  $\geq 40$  mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

### Reversible Causes

- |                           |                         |
|---------------------------|-------------------------|
| • Hypovolemia             | • Tension pneumothorax  |
| • Hypoxia                 | • Tamponade, cardiac    |
| • Hydrogen ion (acidosis) | • Toxins                |
| • Hypo-/hyperkalemia      | • Thrombosis, pulmonary |
| • Hypothermia             | • Thrombosis, coronary  |



## Pediatric Tachycardia With a Pulse Algorithm



## Algoritma Takikardi Pediatrik

**Bradycardia** (Heart rate <50/min)

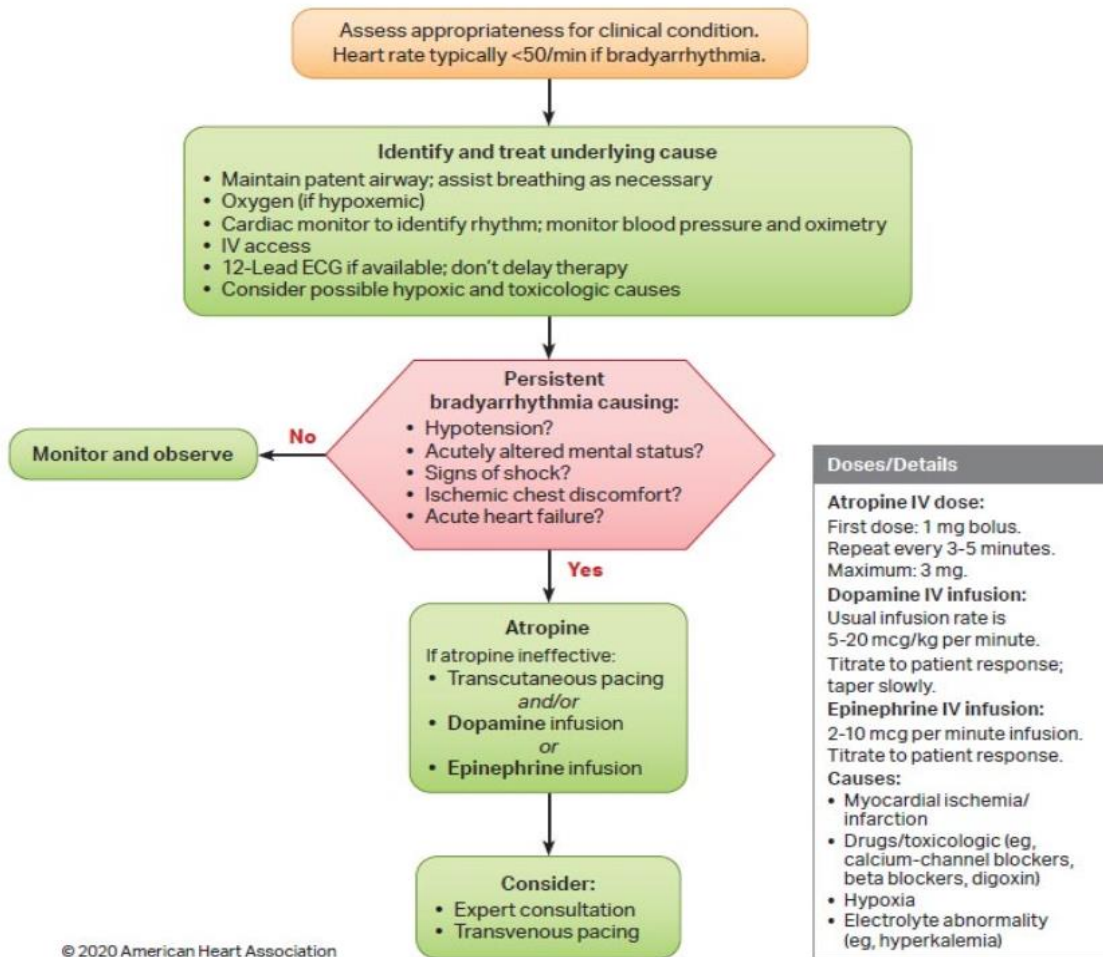
- Maintain patent airway, assist breathing as necessary,
- IV /IO access, Monitor/VS, 12 lead ECG are all helpful

If perfusion adequate, ***continue to monitor and observe*** for signs & symptoms of poor perfusion (hypotension, altered mental status, signs shock, chest pain, acute heart failure)

- Consider **Atropine 1mg** while awaiting pacer  
(May repeat every 3-5 minutes for a max of 3 mg)
  - If ineffective, begin pacing
- Prepare for TCP – use without delay for high grade AVB – 2<sup>nd</sup> degree type 2 to 3<sup>rd</sup> degree
  - Consider infusions of **epinephrine 2 - 10 mcg/min** or **Dopamine 5-20 mcg/kg/min** while awaiting pacer or if pacer is ineffective

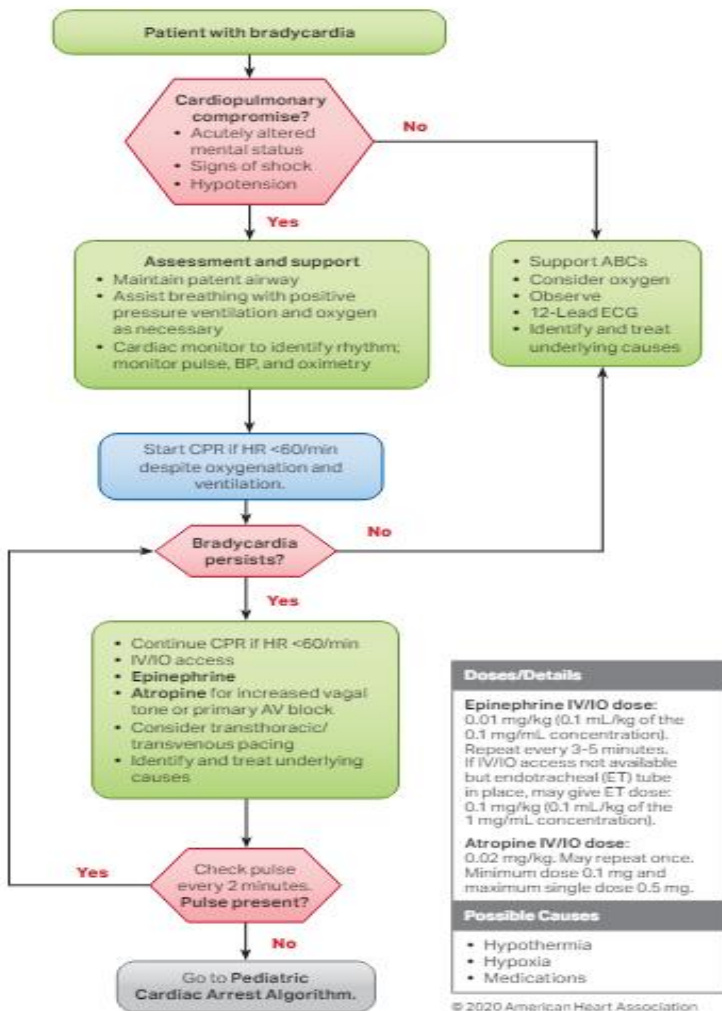


## Adult Bradycardia Algorithm



Algoritma  
Bradikardi  
Dewasa

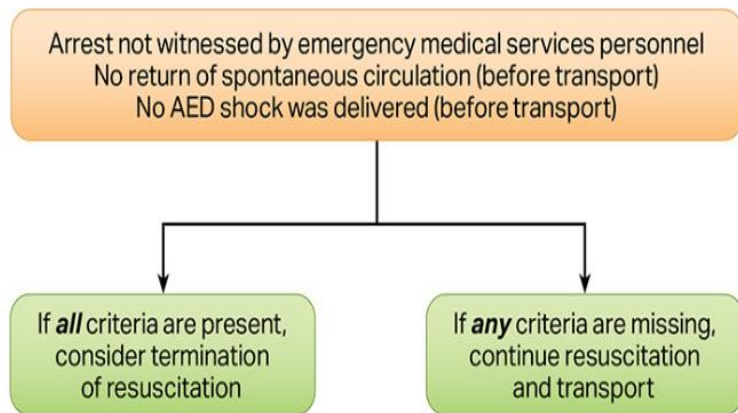
## Pediatric Bradycardia With a Pulse Algorithm



## Algoritma Bradikardi Pediatrik

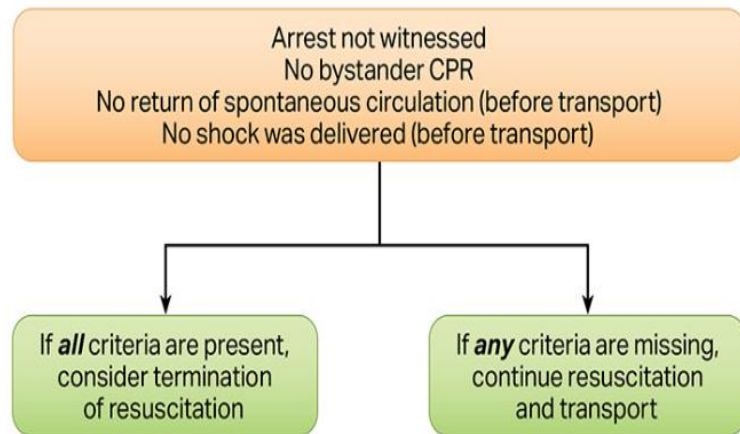


## BLS Termination of Resuscitation



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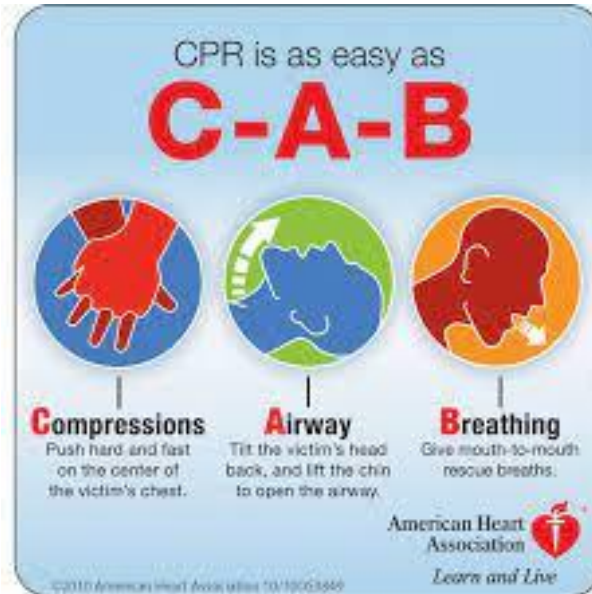
## ACLS Termination of Resuscitation



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# “KEEP THE PATIENT ALIVE “



## Thank You